

# Shipwreck Mapping



## Captain's Notes

### Overview

In this activity, students will act as maritime archaeologists and will be able to experience what it is like for real archaeologists to study and record shipwrecks underwater. Using right angle measurements, teams of students will measure the dimensions and features of a mock shipwreck, simulating real dive conditions and limitations that maritime archaeologists must face. They will make observations and collect data in order to form hypotheses about the ship and its identity. The students will learn how to map a shipwreck and how to collect both historical and archaeological data to form conclusions about that ship.

### Difficulty/Grade Level

Difficult/Grades 4-12 (the activity can be modified for a particular age group)

### Suggested Group Size

3 students per group (based on a class size of 24)

### Helpful Hints

This activity may become confusing with two groups completing two different tasks. Make sure to have one or two helping hands when facilitating this activity.

Always have the students measure from the baseline and use right angle measurements when mapping their section.

### Time

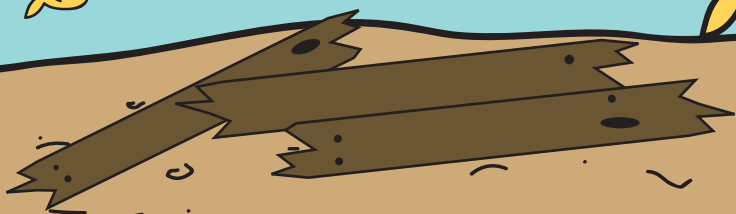
Between 1.5-2 hours (although the activity can be modified to fit a particular situation)

### Skills and Strategies

- Gathering physical clues to make inferences about a wreck
- Learning to form a hypothesis based on observed data
- Mapping an archaeological site using math skills and graphing
- Overcoming challenges archaeologists face while mapping underwater
- Interpreting mathematical and historical data
- Time Management

### Materials

- Mock Shipwreck (outlined either on tarp or with masking tape)
- Measuring tape (running the length of the mock shipwreck as the baseline)
- String (3 pieces, used as grid lines to separate the wreck into 8 sections)
- Measuring tape (1 per group)
- Clipboard (1 per group)
- Ruler (1 per student)
- Graph Paper (1 page per student)
- Graph Paper (11"x 17")
- Log Sheet (1-2 per group)
- Information Packet: Parts of a Ship Diagram, Sanctuary Vocabulary, Site Plans and Photo Mosaics handout, Shipwreck Data Sheet, Thunder Bay Tribune, Thunder Bay Shipwreck Map, Dive Signals Reference Sheet





## Preparation

1. The mock shipwreck should be set up before the students arrive to begin the activity. Lay down the tarp or tape the outline of the wreck to the floor (the shipwreck should be at least 10-15 feet long, though a length of 16 feet works best). Refer to the Mock Shipwreck Layout to create the mock shipwreck.
2. Tape the 3 pieces of string in increments along the baseline to form 8 equal sections of the shipwreck, 4 on the port side and 4 on the starboard side.
3. Make copies of each of the handouts for the students.

## Procedures

1. Introduce the students to maritime archaeology and the importance of Thunder Bay National Marine Sanctuary (refer to the activity introduction). Tell the students that they are going to pretend to be underwater archaeologists and that they are about to make a dive on a recently discovered shipwreck. During the dive they will have to take measurements of the shipwreck and record what they find. They will also have to use historical research to help identify what shipwreck they might have discovered.



## Shipwreck Challenge

To add another challenge level, the students could pretend to be on a real dive where they cannot talk to each other and so they must find another way to communicate underwater. (See Dive Signals Reference Sheet)

Transfer your class's mosaic site plan onto an 11"x 17" piece of graph paper to create a real site plan of the whole wreck. Send the site plan to Thunder Bay National Marine Sanctuary to be put on display.



## Procedures (cont.)

2. Describe some of the terms on the vocabulary list that the students will need to know for the exercise, such as port, starboard, bow, stern, baseline, site plan, etc.
3. Separate the class into two teams, Dive Team A and Dive Team B. Separate each of the Dive Teams into smaller groups of three or four students (there should be a total of 8 small groups).
4. Pass out materials listed for students to each group.
5. Explain that students will be using right angle measurements in this activity. Explain how students will measure from a location on the baseline to a point on the mock wreck. They will use that measurement and their following measurements of their section to create a scaled drawing on graph paper. Stress that each measurement will be taken from the baseline.
6. Tell the students that they only have 20 minutes to complete their dive. They will need to judge what features are the most important parts of the wreck and map those parts first.
7. There will be four small groups mapping the wreck at a time. Dive Team A will map first, occupying staggered sections of the shipwreck so that the teams will have plenty of room to work.
8. After 20 minutes, change the groups so that the four other small groups can begin their observations. While one Dive Team is mapping the wreck, the other will be doing historical research on four vessels that might give clues about the shipwreck they will be mapping.
9. Have the Dive Team conducting historical research fill in their Shipwreck Data Sheets by finding information in the Thunder Bay Tribune.
10. When both Dive Teams have had the chance to make their observations during a dive on the shipwreck and have collected data from historical research, allow all the students to discuss their observations and research with their groups.
11. Using the information they have collected, have the students make a scaled drawing of the shipwreck on their graph paper. Give the students about 30 minutes to graph the shipwreck.
12. When all the groups are finished mapping and making their scaled drawings, collect the drawings from each group and bring them together to assemble a mosaic of the entire wreck site.
13. Gather the students in their groups for a class discussion. Ask the students about what they learned while mapping and graphing.





## Discussion

- *How did your group decide what was important to map and what wasn't?*

*We chose the most obvious points, such as the hull and section outline, or straight lines that would be useful in drawing later on.*

- *What could your group have done to be more efficient while mapping?*

*We could have planned ahead, known what to measure, listened to one person, studied the Parts of Ship handout first, or made a sketch of the section first.*

- *What would have been some helpful tools your group could have used while mapping or graphing?*

*We could have used a small ruler, a camera, an ROV, or video equipment.*

- *Did the mosaic come out accurately or were there differences between sections? Why might that have been?*

*We may have taken inaccurate measurements or missed certain important measurements.*

## Reeling It In

Review the importance of mapping a wreck accurately. Discuss the difficulties of mapping a wreck underwater. Talk about how archaeologists identify shipwrecks and the importance of both historical documents and archaeological research. Archaeologists must rely on both of these forms of information to properly understand and interpret shipwreck sites. Remind the students that shipwreck sites are like underwater museums and we must all work together to preserve, protect, and build appreciation for these amazing underwater treasures.

## Extension

- A writing assignment may be added to the activity to stimulate further critical thinking. Please review the Research Log post-activity.
- Visit [www.thunderbay.noaa.gov](http://www.thunderbay.noaa.gov) for information about the shipwrecks of Thunder Bay and further education.
- Visit [www.sanctuaries.noaa.gov](http://www.sanctuaries.noaa.gov) for information about the Maritime Heritage Program and other national marine sanctuaries.

## Resources

1. Thompson, Kate. *Mock Shipwreck: An Exercise in Maritime Archaeology*. NOAA National Marine Sanctuary Program. Wisconsin Historical Society, Office of School Services. 2001.
2. Hanner, Roxanne; Slayden, Beverly; Butler, Jennifer; Thompson, Paula. *Shipwrecks of Thunder Bay: Thematic Unit for Fourth Grade*. Alcona Community Schools. Alpena Public Schools.
3. Jason 2006 Shipwreck Activity
4. *Working with Water: Wisconsin Waterways Teacher's Guide and Student Materials*. Wisconsin Historical Society Press. Madison, WI.
5. *Thunder Bay National Marine Sanctuary*. [www.thunderbay.noaa.gov](http://www.thunderbay.noaa.gov)
6. *National Marine Sanctuary Program*. [www.sanctuaries.noaa.gov/education](http://www.sanctuaries.noaa.gov/education).



## Figure It Out

*What kinds of obstacles might underwater archaeologists face while mapping a shipwreck site?*

*One challenge might be that they could not talk to each other. Archaeologists would also have to stay in one place above the wreck to be able to map it. If there was a current, it might be difficult to stay in one spot. Another obstacle might be that the visibility is low, and archaeologists could only see one very small section at a time. It can take a long time to map a wreck site. Archaeologists have to decide what is really important to map so that they can finish mapping before they run out of air.*

